that along the [true] cold front), but separating two masses of polar air [which formerly constituted the two currents on opposite sides of the cold front] of the parent cyclone, namely, the returning polar air from the east which is relatively mild, and the new polar air from the northwest, which is very cold.[2]

(*b*) The parent cyclone persists (case of January 17, 1922). The northern sector of the Hatteras LOW is then made up of a homogeneous mass of cold air. This condition of affairs, which is the most frequent condition, especially in winter, demands a powerful invasion of polar air, thus putting an end to the series of cyclones in the family.[3] Under these conditions several Hatteras LOWS are produced in succession. If the invasion is powerful enough it may even continue its progress toward the south and form (in autumn and spring) an "*Antillaise.*" [4]

The fact that the Hatteras depressions are young explains their lasting all the way across the Atlantic Ocean. Born at the end of a cyclone family, their trajectories in the nature of the case lie farther to the south, and they are able to come on shore in Europe at a lower latitude (unless the Azores anticyclone, by shifting toward the northeast, forces them nearer Iceland). Always if they unite with a polar LOW it is necessarily with the first member of the next succeeding family, and hence at a fairly high latitude.

In case where the original depression comes from the west, it seems to proceed from a California pseudofront resembling a Mediterranean pseudofront (the Pacific anticyclone being substituted for the Atlantic anticyclone), [5] or from a southern branch of the Pacific polar front, which divides by fission when it runs foul of a weak continental anticyclone.

3. *Contribution to general dynamic meteorology.*—The first type of Hatteras LOW is to be likened to the Genoese depressions. But in the case of the latter the cutting off of the warm sector (seclusion)[6] is accomplished only by the chain of the Alps; while in the case of the Hatteras depression it is the severed tropical "root" of the mother cyclone which is revitalized by the effect of the contrast in temperature, *whence we have a confirmation of the idea that the phenomena of regeneration of cyclones tend to favor certain regions.*

The second type is to be compared with the Mediterranean pseudofront. But in America, it is in winter that the low temperature of a mass of polar air crossing the continent is best retained, while for Morocco it is in summer, since the journey is an oceanic one. Furthermore, in America, in the absence of a center of action, the temporary invasion by a moving anticyclone can give birth to only an occasional disturbance. In contrast to this, in the eastern Atlantic a polar invasion reinforces a great anticyclonic *massif* along [the border of] which a persisting control can function. In any case *the building up of the polar front by the mechanism of wave formations operates preferably in regions where special seasonal controls favor a seasonal development of the phenomena.*

In view of the analogy between the great warm and cold currents in the western Pacific and the western Atlantic, it is not impossible that some of the polar LOWS of America have their origin over Japanese waters through a mechanism similar to that which causes the Hatteras depressions.

The Hatteras depressions may unite either with the polar LOW which comes immediately after their parent cyclone, or with the following LOW. They show (1) *the interference of well developed and intense depressions;* (2) *that a wave formation may unite with a depression belonging to the next succeeding cyclone family.*

[1] This situation will be made clear by reference to J. Bjerknès and H. Solberg, Life Cycle of Cyclones and the Polar-Front Theory of Atmospheric Circulation. Geofysiske Publikationer, 3, No. 1, Kristiania, 1922. See especially p. 10, the right-hand diagram of Figure 6.
See also the review and discussion of the above paper, by A. J. Henry in MO. WEATHER REV., September, 1922, 50: 468–474. The Figure 6 cited above is reproduced on p. 470.

[2] J Bjerknès and H. Solberg, *loc, cit*, p. 91 ff.

[3] [This name, which has not, as yet, acquired standing in meteorological terminology, seems to be here applied to a northerly wind caused somewhat as the Texas "norther" is. Professor Talman suggests that it may be the "nortes" of the old Spanish navigators in the Antilles.—B. M. V.]

[4] See Ph. Schereschewsky and Ph. Wehrlé, Pseudo Polar Fronts. Comptes Rendus, 179, 1924, p. 1185.

[5] *Loc. cit.*, p. 1618.

METEOROLOGICAL SUMMARY FOR JANUARY, 1925, IN SOUTH AMERICA

[Reported by Señor Julio Bustos Navarrete, director El Salto Observatory, Santiago, Chile]

The month was relatively rainy in southern Chile, northern Argentina, and Bolivia. Cyclonic depressions were frequent in the southern part of the Continent; at Punta Arenas the pressure fell to 28.94 inches (735 mm.) on the 7th.

On the 21st an important anticyclonic center was situated off the Atlantic coast from Bahia Blanca and the mouth of the Rio Negro; the maximum pressure at this time was 30.32 inches (770 mm.).

In general, temperatures were rather high in central Chile and on the Atlantic coast. Maximum temperatures of 104° and 95° (40° C. and 35° C.) were recorded at Buenos Aires and Santiago, respectively. The lowest temperature observed was 29° (−1.6° C.) at Lonquimay in the Chilean Andes.

Electrical storms with rain and hail were rather frequent at La Paz and Sucre.

Director Navarrete submits two weather maps, one each for January 7 and 21. The first portrays a deep barometric depression centered over the extreme southern tip of the Continent with an area of high pressure over the Pacific just west of Chile. This is the type of cloudy, rainy weather in Chile.

The second map presents a different pressure distribution, viz, a strong anticyclone centered over the Atlantic coast east of Argentina. This is a type of fair weather with partial cloudiness in the central regions of Paraguay and Argentina.